New record of the invasive pest species *Cydalima perspectalis* (Walker, 1859) in Emilia Romagna (Italy) (Lepidoptera: Crambidae, Spilomelinae)

Britta Uhl and Mirko Wölfling

B.Sc. Britta Uhl, University of Würzburg, Department of Animal Ecology and Tropical Biology, Theodor-Boveri-Institut für Biowissenschaften, Biocenter, Am Hubland, D-97074 Würzburg, Germany

Dipl.-Biol. Mirko Wölfling, University of Vienna, Department of Tropical Ecology and Animal biodiversity, Rennweg 14, A-1030 Wien (Vienna), Austria; saturnia@web.de (corresponding author)

Abstract: *Cydalima perspectalis* (Walker, 1859) is one of the most intensively observed pest species in Europe. Once introduced, the moth has spread from Germany, where the first record was made in 2007, over Switzerland, France, the Netherlands and Austria. In 2008 the moth reached the United Kingdom. In the south this species was also found in Turkey, Hungary, Slovenia and 2011 in Italy. Our new record of *C. perspectalis* in Italy confirms the further southward expansion of this species. Now, there is a new locality in the Emilia Romagna, where *C. perspectalis* was found in Pineta san Vitale, a protected area of the Parco regionale del Delta del Po near Ravenna.

Key words: *Cydalima perspectalis*, neozoic, pest species, Italy, Emilia Romagna

Neunachweis der neozoischen Schädlingsart *Cydalima perspectalis* (Walker, 1859) in der Emilia Romagna (Italien) (Lepidoptera: Crambidae, Spilomelinae)

Zusammenfassung: *Cydalima perspectalis* (Walker, 1859) ist momentan wohl eine der am intensivsten beobachteten invasiven Schädlingsarten in Europa. Nach der Einschleppung, die schon 2007 in Deutschland beobachtet wurde, verbreitete sie sich über die Schweiz, Frankreich, die Niederlande und Österreich sowie 2008 auch nach Großbritannien. Im Süden wurde die Art bereits in der Türkei, Ungarn, Slowenien und 2011 auch erstmals in Italien gefunden. Unser neuer Fund bestätigt, dass sich diese Art auch dort immer weiter verbreitet. Nun haben wir einen neuen Fund in der Emilia Romagna zu verzeichnen, wo *C. perspectalis* in Pineta san Vitale, einem geschützten Teilstück des Parco regionale del Delta del Po in der Nähe von Ravenna, gefunden wurde.

Nuove evidenze della specie infestante neozoica *Cydalima perspectalis* (Walker, 1859) in Emilia Romagna (Italia) (Lepidoptera: Crambidae, Spilomelinae)

Riassunto: Al momento *Cydalima perspectalis* (Walker, 1859) è certo una delle specie infestanti invasive più intensamente osservate in Europa. Dopo la comparsa che fu osservata in Germania già nel 2007, si diffuse in Svizzera, Francia, Paesi Bassi, Austria anche in Gran Bretagna nel 2008. A sud la specie fu trovata già in Turchia, Ungheria, Slovenia e nel 2011 per la prima volta anche in Italia. Il nostro nuovo ritrovamento conferma che questa specie si sta sempre più diffondendo anche qui. Ora dobbiamo registrare un nuovo ritrovamento in Emilia Romagna: *C. perspectalis* è stata trovata nella Pineta San Vitale, una sezione protetta del Parco regionale del Delta del Po, nei pressi di Ravenna.

Introduction

Pineta san Vitale is part of the Parco regionale del Delta del Po and is located about 1 km north of Ravenna (Fig. 1). To the east, the park is limited by a lagoon of the Adriatic Sea. In the northwest there are floodplains and

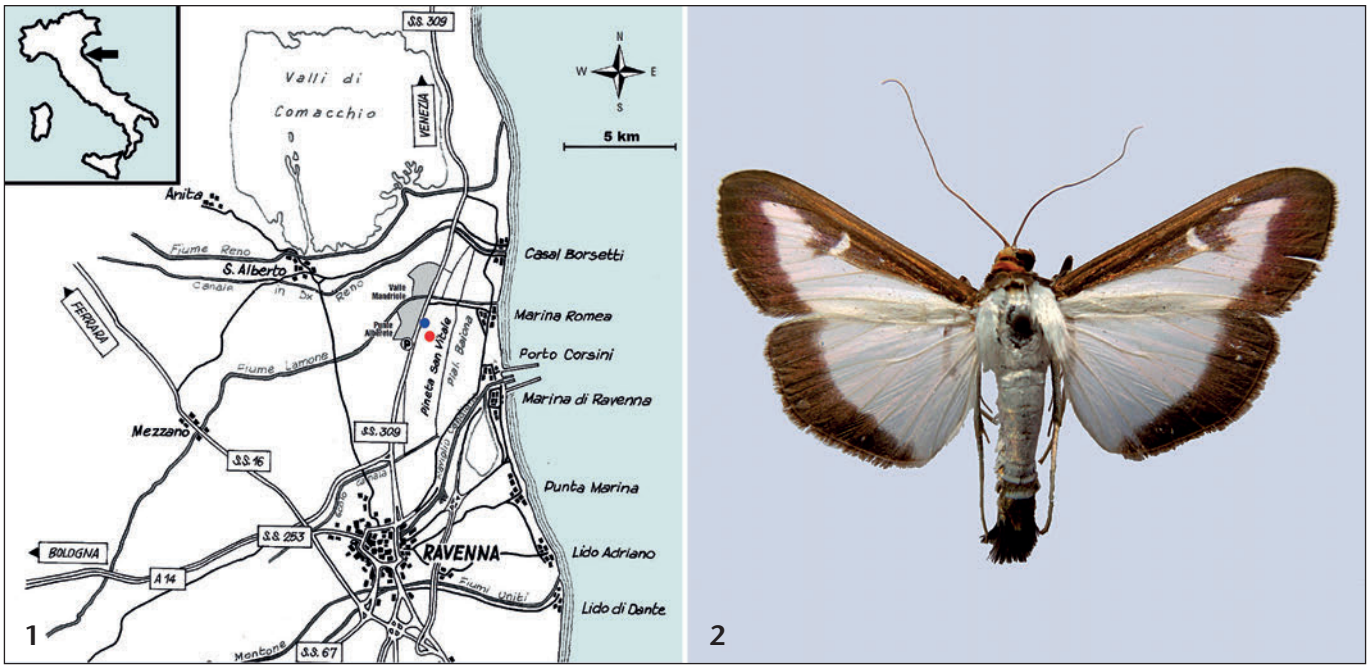

Fig. 1: Map of Italy (upside on the left) with the geographical location of Pineta san Vitale (arrow). The area is north of Ravenna. Longest expansion of Pineta san Vitale (northeast to southwest) is about 7,5 kilometers. Red mark: the location where the *C. perspectalis* was found. Blue mark: the restaurant where some box trees are located. — **Fig. 2:** The ♂ of *C. perspectalis* from Pineta san Vitale.

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wetland. To the very north, a heterogeneous area is bordering, whose vegetation is composed of a mixture of small trees and bushes. Pineta san Vitale itself is largely covered with pine and oak forest characterized by a typical Mediterranean climate, with rather arid summers and moderately humid conditions during winter time. Typical plants of the area are *Quercus ilex, Pinus pinea, Pinus pinaster* and evergreen scrubs. Plants of the genus *Buxus* are not common in the park. Only very few plants of *Buxus sempervirens* are known in the south. Further parts of the park show corridors with sand pioneer vegetation, and the humid sites are covered with mediterranian floodplain and wetland vegetation. The whole area is listed as a Reserva Naturale as part of the Rete Natura 2000 (Montanari 2010).

The box tree moth *Cydalima perspectalis* (Walker, 1859) (Pyraloidea: Crambidae) is an invasive neozoic species from East Asia. It was most likely accidentally brought to Europe by importing its natural host plant (a Chinese species in the genus *Buxus*) contaminated with eggs, caterpillars or pupae. The first colony was discovered 2006 or 2007 in Weil am Rhein, Germany (Krüger 2008, Lepiforum 2012). However, it appears to be likely that the species came some time earlier to Germany (Leuthardt 2010). From this initial location *C. perspectalis* spread — persumably by active dispersion — further in Germany and possibly also to Switzerland and France (Van der Straten & Muus 2010). Because the species and its dispersal were observed since only shortly after its first appearance, the data could be used to analyse the distance of natural spread per year, which is inferred to be no more than 5–10 km/a (Van der Straten & Muus 2010, Lepiforum-Bestimmungshilfe 2012).

Additionally to its active dispersal, this species is evidently transported by humans (for example from infested plant nurseries via big shopping centres selling infested *Buxus* plants) together with its host plant at a much faster pace. Thus, soon there were further localities discovered far away from the first one. For example, this species was found in the Netherlands (2008), in the United Kingdom (2008), in Austria (2009) and in Belgium (2010) (Van der Straten & Muus 2010). Further in Turkey (2011) (Hizal et al. 2012), Hungary (2011) (Szabolcs & Bálint 2011), Slovenia (2011) (Seljak 2012), and Northern Italy (Lago Maggiore) where a location is named on an advertising internetpage (Lago-Maggiore-Urlaub.de 2012).

In its native distribution area in SE China (compare Mally & Nuss 2010 for further details on the distribution in E Asia etc.), the caterpillar feeds on Chinese buxus (*Buxus sinica*) (Zhou et al. 2005). On the basis of previous observations in Europe summarized in Lepiforum-Bestimmungshilfe (2012), *C. perspectalis* there mainly feeds on *Buxus sempervirensis*. Details of the systematic position, correct taxonomic placing and other basic information about the species see in Mally & Nuss (2010).

Results and discussion

In the last 15 years samplings of the moths in Pineta san Vitale were made in all habitats of the whole area, across different seasons. For instance in 2011 80 samples were taken with automatic light traps (with fluorescent tubes) in the four different kinds of vegetation. In 2012 26 samples were collected manually.

On 8. x. 2012 a collecting light for manual capturing was established in a kind of clearing in front of the Ca' Vecchia house (44°30'34.91" N, 12°13'45.24" E). Adjacent to this site there are floodplain, oak and pinewood areas. As light source, a 500 W (HWL) lamp was used.

At about 20:10 h a box tree moth ♂ arrived at light (Fig. 2). Before, this species was not known in this area. Investigations in the internet revealed further unconfirmed sightings of *C. perspectalis* in the Emilia-Romagna. For example, a photography of a ♀ is shown in a contribution dated 25. ix. 2012 (Entomologiitaliani 2012). Therefore it can be assumed that the species is now firmly established in the Emilia Romagna. For Pineta san Vitale this ♂ is the first record.

There are different possibilities how the sampled box tree moth reached the location in Pineta san Vitale. The most likely appears to be a restaurant, which is located at a distance of about 480 m to the light trap site. In the restaurant's garden, there are a few box trees for decoration. The moth might have been brought in together with the plants. But as we examined the box trees there were no indications of silk or feeding damage. In the park, there is a natural occurrence of *Buxus sempervirens* (Lazzari et al. 2010). Inspection revealed that also these plants had no obvious evidence of infestation.

As Pineta san Vitale is a relatively isolated area, it remains unknown so far from where or how *C. perspectalis* came to the sampling site. The next village in 3 km distance to our sampling location is Marina Romea, but situated between Pineta san Vitale and this village there is a lagoon with more than 2 km of open water. In addition, Scirocco winds frequently blow there in direction from south to north. Hence it is very unlikely that a moth actively disperses or is passively drifted across this area. In the south of Pineta san Vitale, industrial areas of the city of Ravenna are situated about 1 km from the border of the park, but with more than 5 km distance to Ca' Vecchia this is also somewhat doubtful.

Given that this species is spreading so fast and already changed its diet from exotic to native box tree species, it must be assumed that the damage potential of this neozoic pest species is much higher in southern Europe than previously suspected. *C. perspectalis* could potentially become a large-scale ecological problem, particulary for Italy and other south European countries and also for warm landscapes on the Atlantic side with natural occurrences of box trees. Without doubt, this species has the potential to damage over the time more than only urban parks and ornamental plantings.

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Acknowledgements

We thank Dr. Angela Vistoli (Comune di Ravenna) for the sampling permit. For technical support and helpful advices many thanks to Dr. Giorgio Lazzari, Daniele Camprini (both La Arca) and Arthur Bott. The manuscript was critically checked by Prof. Dr. Konrad Fiedler (University of Vienna) and Dr. Wolfgang A. Nässig (Forschungsinstitut Senckenberg, Frankfurt am Main). Financial support through the University of Vienna and by Knut Wölfling and Theo Schulthess is gratefully acknowledged. Massimo Poggiali and Elena Trioschi kindly translated the Italian Riassunto.

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Received: 29. x. 2012

© Entomologischer Verein Apollo e. V., Frankfurt am Main, Juli 2013 ISSN 0723-9912

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